CLAIMS

What I claim is:

1. In an enhanced surface effect ship wherein said enhanced surface effect ship includes port and starboard sidehulls and is supported upon a water surface at least in part by at least one artificially pressurized gas cushion, the improvement comprising:

   a port and a starboard bow member wherein water contacting portions of said port and starboard bow members extend, as seen when the enhanced surface effect ship is moving forward at high speed in a calm sea, forward of an average of longitudinal positions, as seen in longitudinal vertical planes of the enhanced surface effect ship, of forward water contacting portions of a gas cushion forward moveable gas seal member by at least ten percent of a waterline length of the enhanced surface effect ship and wherein said gas cushion forward moveable gas seal member is disposed, at least in part, between the port and starboard bow members and wherein said gas cushion forward moveable gas seal member is moveable in relation to a hull of the enhanced surface effect ship and wherein portions of the gas cushion, as seen from an underside of the enhanced surface effect ship, extends forward of said forward water contacting portions of the gas cushion forward moveable gas seal member into the port and starboard bow members.

2. The enhanced surface effect ship of claim 1 wherein water contacting portions of said port and starboard bow members extend, as seen when the enhanced surface effect ship is moving forward at high speed in a calm sea, forward of

an average of longitudinal positions, as seen in longitudinal vertical planes of the enhanced surface effect ship, of said forward water contacting portions of gas cushion forward moveable gas seal member by at least fifteen percent of a waterline length of the enhanced surface effect ship.

3. The enhanced surface effect ship of claim 1 wherein water contacting portions of said port and starboard bow members extend, as seen when the enhanced surface effect ship is moving forward at high speed in a calm sea, forward of an average of longitudinal positions, as seen in longitudinal vertical planes of the enhanced surface effect ship, of said forward water contacting portions of the gas cushion forward moveable gas seal member by at least twenty percent of a waterline length of the enhanced surface effect ship
4. The enhanced surface effect ship of claim 1 wherein water contacting portions of said port and starboard bow members extend, as seen when the enhanced surface effect ship is moving forward at high speed in a calm sea, forward of an average of longitudinal positions, as seen in longitudinal vertical planes of the enhanced surface effect ship, of said forward water contacting portions of the gas cushion forward moveable gas seal member by at least twenty-five percent of a waterline length of the enhanced surface effect ship
5. The enhanced surface effect ship of claim 1 wherein portions of the gas cushion, as seen from an underside of enhanced surface effect ship, that extend forward of the water contacting portions of the gas cushion forward moveable gas seal member, converge going from aft to forward.

6. The enhanced surface effect ship of claim 1 wherein the artificially pressurized gas cushion portions disposed in the undersides of the port and starboard bow members extend, as seen when the enhanced surface effect ship is moving forward at high speed in a calm sea, forward of an average of longitudinal positions, as seen in longitudinal vertical planes of the enhanced surface effect ship, of said forward water contacting portions of the gas cushion forward moveable gas seal member by at least fifteen percent of a waterline length of the enhanced surface effect ship.

7. The enhanced surface effect ship of claim 1 wherein the artificially pressurized gas cushion portions disposed in the undersides of the port and starboard bow members extend, as seen when the enhanced surface effect ship is moving forward at high speed in a calm sea, forward of an average of longitudinal positions, as seen in longitudinal vertical planes of the enhanced surface effect ship, of forward water contacting portions of the gas cushion forward moveable gas seal member by at least five percent of a waterline length of the enhanced surface effect ship.

8. The enhanced surface effect ship of claim 1 wherein the artificially pressurized gas cushion portions disposed in the undersides of the port and starboard bow members extend, as seen when the enhanced surface effect ship is moving forward at high speed in a calm sea, forward of an average of longitudinal positions, as seen in longitudinal vertical planes of the enhanced surface effect ship, of forward water contacting portions of the gas cushion

forward moveable gas seal member by at least ten percent of a waterline length of the enhanced surface effect ship.

9. The enhanced surface effect ship of claim 1 wherein inboard sides of said port and starboard sidehulls become more vertical proximal the gas cushion forward moveable gas seal member.

10. The enhanced surface effect ship of claim 9 wherein the gas cushion forward moveable gas seal member is in mechanical communication with the inboard sides of the port and starboard sidehulls.

11. The enhanced surface effect ship of claim 1 wherein water contacting portions of said gas cushion forward moveable gas seal member disposed between the port and starboard sidehulls extends over less than twenty percent of an overall width of the enhanced surface effect ship proximal the gas cushion forward moveable gas seal member.

12. The enhanced surface effect ship of claim 1 wherein water contacting portions of said gas cushion forward moveable gas seal member disposed between the port and starboard bow members extends over less than twenty-five percent of an overall width of the enhanced surface effect ship proximal the gas cushion forward moveable gas seal member.

13. The enhanced surface effect ship of claim 1 wherein water contacting portions of said gas cushion forward moveable gas seal member disposed between the port and starboard bow members extends over less than thirty percent of an overall width of the enhanced surface effect ship proximal the gas cushion forward moveable gas seal member.

14. The enhanced surface effect ship of claim 1 wherein water contacting portions of said gas cushion forward moveable gas seal member disposed between the port and starboard bow members extends over less than thirty-five percent of an overall width of the enhanced surface effect ship proximal the gas cushion forward moveable gas seal member.

15. The enhanced surface effect ship of claim 1 wherein inboard portions of the port and starboard sidehulls are truncated over a portion of their length aft of at least a majority of the gas cushion forward moveable gas seal member.

16. The enhanced surface effect ship of claim 15 wherein truncated aft extending portions of said port and starboard sidehulls extend downward from surfaces of a gas cushion recess to thereby form, at least partially, fluid fences that at least partially separate portions of the artificially pressurized gas cushion.

17. The enhanced surface effect ship of claim 15 wherein, when the enhanced surface effect ship is moving forward at high speed in a calm sea at a one and one-half degree bow up trim angle, said fluid fences of said port and starboard sidehulls are not in contact with a water surface over a majority of their length.

18. The enhanced surface effect ship of claim 1 wherein the port and starboard bow members diverge either side of vertical sidehull longitudinal planes going aft from forward portions of their bows.

19. The enhanced surface effect ship of claim 18 wherein said vertical sidehull longitudinal planes are vertical sidehull centerline planes of the port and starboard sidehulls.

20. The enhanced surface effect ship of claim 1 wherein a gas cushion aft gas seal member, as seen in a vertical transverse plane of the enhanced surface effect ship, comprises at least two inverted-V shaped portions.

21. The enhanced surface effect ship of claim 1 wherein a gas cushion aft gas seal member, as seen in a vertical transverse plane of the enhanced surface effect ship includes a moveable, in relation to the hull of the enhanced surface effect ship, gas cushion aft seal section wherein said moveable gas cushion aft seal section is no more than thirty five percent of the width of the enhanced surface effect ship as seen in a vertical transverse plane of the hull of the enhanced surface effect ship.

22. The enhanced surface effect ship of claim 1 which further comprises longitudinally oriented fluid fences that extend downward from surfaces of a gas cushion recess.

23. The enhanced surface effect ship of claim 1 wherein said enhanced surface effect ship is running at a bow up trim angle of less than five degrees.

24. The enhanced surface effect ship of claim 1 wherein said enhanced surface effect ship is running at a bow up trim angle of less than two and one half degrees.

25. In an enhanced surface effect ship wherein said enhanced surface effect ship includes port and starboard sidehulls and is supported upon a water surface in part by at least one artificially pressurized gas cushion, the improvement comprising:

a port and a starboard bow member wherein water contacting portions of said port and starboard bow members extend, as seen when the enhanced surface effect ship is moving forward at high speed in a calm sea, forward of an average of longitudinal positions, as seen in longitudinal vertical planes of the enhanced surface effect ship, of forward water contacting portions of a gas cushion forward moveable gas seal member and wherein said gas cushion forward moveable gas seal member is disposed, at least in part, between the port and starboard bow members and wherein said gas cushion forward moveable gas seal member is moveable in relation to a hull of the enhanced surface effect ship and wherein forward water contacting portions of said port and starboard bow members are truncated aft of at least a majority of the gas cushion forward moveable gas seal member.

26. The enhanced surface effect ship of claim 25 wherein water contacting portions of said port and starboard bow members extend, as seen when the enhanced surface effect ship is moving forward at high speed in a calm sea, forward of an average of longitudinal positions, as seen in longitudinal vertical planes of the enhanced surface effect ship, of forward water contacting portions of the gas cushion forward moveable gas seal member by at least ten percent of a waterline length of the enhanced surface effect ship.

27. The enhanced surface effect ship of claim 25 wherein water contacting portions of said port and starboard bow members extend, as seen when the enhanced surface effect ship is moving forward at high speed in a calm sea, forward of an average of longitudinal positions, as seen in longitudinal

vertical planes of the enhanced surface effect ship, of forward water contacting portions of the gas cushion forward moveable gas seal member by at least fifteen percent of a waterline length of the enhanced surface effect ship.

28. The enhanced surface effect ship of claim 25 wherein the artificially pressurized gas cushion includes portions disposed in the undersides of the port and starboard bow members that extend, as seen when the enhanced surface effect ship is moving forward at high speed in a calm sea, forward of an average of longitudinal positions, as seen in longitudinal vertical planes of the enhanced surface effect ship, of forward water contacting portions of the gas cushion forward moveable gas seal member.

29. The enhanced surface effect ship of claim 28 wherein the artificially pressurized gas cushion portions disposed in the undersides of the port and starboard bow members extend, as seen when the enhanced surface effect ship is moving forward at high speed in a calm sea, forward of an average of longitudinal positions, as seen in longitudinal vertical planes of the enhanced surface effect ship, of forward water contacting portions of the gas cushion forward moveable gas seal member by at least five percent of a waterline length of the enhanced surface effect ship.

30. The enhanced surface effect ship of claim 28 wherein the artificially pressurized gas cushion portions disposed in the undersides of the port and starboard bow members extend, as seen when the enhanced surface effect ship is moving forward at high speed in a calm sea, forward of an average of

longitudinal positions, as seen in longitudinal vertical planes of the enhanced surface effect ship, of forward water contacting portions of the gas cushion forward moveable gas seal member by at least ten percent of a waterline length of the enhanced surface effect ship.

31. The enhanced surface effect ship of claim 25 wherein the gas cushion portions disposed in the undersides of the port and starboard bow members diverge either side of vertical sidehull longitudinal planes going aft from their forward portions.

32. The enhanced surface effect ship of claim 31 wherein said vertical longitudinal planes are vertical longitudinal centerline planes of the port and starboard sidehulls.

33. The enhanced surface effect ship of claim 25 wherein water contacting portions of said gas cushion forward moveable gas seal member disposed between the port and starboard bow members extends over less than thirty-five percent of an overall width of the enhanced surface effect ship proximal the gas cushion forward moveable gas seal member.

34. The enhanced surface effect ship of claim 25 wherein inboard portions of the port and starboard sidehulls become more vertical proximal the gas cushion forward moveable gas seal member.

35. The enhanced surface effect ship of claim 34 wherein truncated aft extending portions of said port and starboard sidehulls extend downward from surfaces of a gas cushion recess to thereby form, at least partially, fluid fences that at least partially separate portions of the artificially pressurized gas cushion.

36. The enhanced surface effect ship of claim 35 wherein, when the enhanced surface effect ship is moving forward at high speed in a calm sea, said fluid fences of said port and starboard sidehulls are not in contact with a water surface over a majority of their length.

37. The enhanced surface effect ship of claim 25 wherein a gas cushion aft gas seal member, as seen in a vertical transverse plane of the enhanced surface effect ship, comprises at least two inverted-V shaped portions.

38. The enhanced surface effect ship of claim 25 wherein a gas cushion aft seal member, as seen in a vertical transverse plane of the enhanced surface effect ship includes a moveable, in relation to the hull of the enhanced surface effect ship, gas cushion aft gas seal member wherein said moveable gas cushion aft gas seal member is no more than thirty five percent of the width of the enhanced surface effect ship as seen in a vertical transverse plane of the hull of the enhanced surface effect ship.

39. The enhanced surface effect ship of claim 25 which further comprises longitudinally oriented fluid fences that extend downward from surfaces of a gas cushion recess.

40. The enhanced surface effect ship of claim 25 wherein said enhanced surface effect ship is running at a bow up trim angle of less than five degrees.

41. The enhanced surface effect ship of claim 25 wherein said enhanced surface effect ship is running at a bow up trim angle of less than two and one half degrees.

42. In an enhanced surface effect ship wherein said enhanced surface effect ship includes port and starboard sidehulls and is supported upon a water surface in part by at least one artificially pressurized gas cushion, the improvement comprising:

a port and a starboard bow member wherein water contacting portions of said port and starboard bow members extend, as seen when the enhanced surface effect ship is moving forward at high speed in a calm sea, forward of an average of longitudinal positions, as seen in longitudinal vertical planes of the enhanced surface effect ship, of forward water contacting portions of a gas cushion forward moveable gas seal member and wherein said gas cushion forward moveable gas seal member is disposed, at least in part, between the port and starboard bow members and wherein said gas cushion forward moveable gas seal member is moveable in relation to a hull of the enhanced surface effect ship and wherein forward water contacting portions of said port and starboard bow members diverge either side of their water contacting bow portions such that their measured inboard and outboard divergence either side of their water contacting bow portions is numerically within fifty percent of each other and wherein inboard sides of said port and starboard bow members become more vertical proximal the gas cushion forward moveable gas seal member.

43. The enhanced surface effect ship of claim 42 wherein said port and starboard bow members further comprise artificially pressurized gas cushion portions disposed in their undersides.

44. The enhanced surface effect ship of claim 42 wherein inboard portions of the port and starboard sidehulls are truncated over a portion of their length aft of at least a majority of said gas cushion forward moveable gas seal member.

45. The enhanced surface effect ship of claim 42 wherein water contacting portions of said moveable gas seal member disposed between the port and starboard bow members extends over less than thirty-five percent of an overall width of the enhanced surface effect ship proximal the gas cushion forward moveable gas seal member.

46. The enhanced surface effect ship of claim 42 wherein water contacting portions of said port and starboard bow members extend, as seen when the enhanced surface effect ship is moving forward at high speed in a calm sea, forward of an average of longitudinal positions, as seen in longitudinal vertical planes of the enhanced surface effect ship, of forward water contacting portions of the gas cushion forward moveable gas seal member by at least fifteen percent of a waterline length of the enhanced surface effect ship.

47. The enhanced surface effect ship of claim 42 which further comprises longitudinally oriented fluid fences that extend downward from surfaces of a gas cushion recess.

48. The enhanced surface effect ship of claim 42 wherein said enhanced surface effect ship is running at a bow up trim angle of less than five degrees.

49. The enhanced surface effect ship of claim 42 wherein said enhanced surface effect ship is running at a bow up trim angle of less than two and one half degrees.

50. In an enhanced surface effect ship wherein said enhanced surface effect ship includes port and starboard sidehulls and is supported upon a water surface at least in part by at least one artificially pressurized gas cushion, the improvement comprising:

a forward moveable, in relation to a hull of the enhanced surface effect ship, gas seal member disposed, at least in its majority, between said port and starboard sidehulls wherein said port and starboard sidehulls diverge going aft of their bows either side of vertical longitudinal planes passing through said bows as seen when the enhanced surface effect ship is moving forward at high speed in a calm sea.

51. The enhanced surface effect ship of claim 50 wherein the port and starboard bow members are truncated aft of at least a majority of the gas cushion forward moveable gas seal member.

52. The enhanced surface effect ship of claim 50 wherein water contacting portions of said port and starboard bow members extend, as seen when the enhanced surface effect ship is moving forward at high speed in a calm sea, forward of an average of longitudinal positions, as seen in longitudinal vertical planes of the enhanced surface effect ship, of said forward water contacting portions of gas cushion forward moveable gas seal member by at least fifteen percent of a waterline length of the enhanced surface effect ship.

53. The enhanced surface effect ship of claim 50 wherein said enhanced surface effect ship is running at a bow up trim angle of less than five degrees.

54. The enhanced surface effect ship of claim 50 wherein said enhanced surface effect ship is running at a bow up trim angle of less than two and one half degrees.

55. The enhanced surface effect ship of claim 50 wherein said port and starboard bow members further comprise artificially pressurized gas cushion portions disposed in their undersides.